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Hospital outpatient services are becoming a larger component in the provision of total health care. Increases in outpatient visits have also resulted in high rates of broken or missed appointments. Broken appointments waste the health professional's time and make for inefficient use of medical resources. More importantly, medical noncompliance and interruption of the continuity of the health care process can lead to irreversible changes in a patient's condition. This study examines the problem of missed appointments at Reynolds Army Community Hospital, Fort Sill, Oklahoma, and recommends corrective actions which can likely be applied at other facilities as well. Keywords: scheduling; manpower utilization; hospital administration; (KT)

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AN ANALYSIS OF MISSED APPOINTMENTS AT A MILITARY TREATMENT FACILITY

Graduate Research Project

By

Richard M. Haemmerle

Captain, MSC

Submitted in Partial Fulfillment
of the Requirements for
Masters Degree in Health Care Administration

15 May 1982

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Martha Bryen, DAC, Supervisor, Central Appointment System; MAJ John Harrell, Chief, Clinical Support Division; LTC James Roberts, AMSC, Chief, MAJ Diane Zelly, AMSC, Assistant Chief, and SSG Yvonne Young, NCOIC, Physical Therapy Clinic; LTC James Connolly, MC, Chief, Donna Noriega, DAC, Supervisor, Anne Jordan, DAC, Secretary, and Wilma Hawkins, DAC, Appointment Clerk, OB/GYN Service; COL Ronald Jones, MSC, Executive Officer, Reynolds Army Community Hospital; Dorothy Guinn, DAC, Supervisor, and Catherine Crowl, DAC, Medical Data Technician, Medical Records Transcription Center.

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I. Introduction

Ambulatory health care has become increasingly utilized throughout the health care industry as a mechanism of providing preventive and economical health care with emphasis on continuity. However, outpatient care had to struggle for a very long period to rise from its second class ranking to inpatient care. Nevertheless, strong environmental factors, primarily economical, has pushed the emphasis of consumers to the use of outpatient clinics for preventive, economical and continuity of health care. In recent years, with the advent of Medicare and all its ramifications, the dramatically spiraling costs of health care, the increasing pressures on inpatient facilities, hospital outpatient services are gradually becoming an essential component in the provision of total health care. However, this high usage rate has also resulted in high rates of broken appointments and patient dropouts. These high rates pose important problems for administrators, clinicians and investigators in ambulatory care. Broken appointments waste the health professional's time and make for inefficient use of medical resources. More important, medical noncompliance and interruption of the continuity of the health care process can lead to irreversible health changes in the patient and the loss of health and life itself.

The increasing use of ambulatory facilities has intensified the search for more effective allocation of resources as well as improved patient service techniques. To this end, Army facilities have implemented central appointment systems to provide individual appointments to the

majority of outpatient clinics[1]. These individualized appointments have been proven to be more effective than other forms of appointment booking[2]. But even so, the increased importance of the ambulatory arm of the hospital has in turn directed attention upon its shortcomings, one of which is high broken appointment rates.

The intent of this study is to examine the problem of missed appointments and evaluate the findings to identify some corrective actions that might be taken. At Reynolds Army Community Hospital (RACH), missed appointment rates as high as 30% have been reported in certain clinics. Numerous physicians and clinic chiefs have complained about the disruption of scheduling and staffing patterns in their respective clinics caused by "no-shows."

It is the intent of this graduate research project to examine the problem of missed appointments in a closed beneficiary system, evaluate the findings, develop alternative courses of corrective actions and initiate these actions on a limited basis to ascertain their effectiveness. This paper should provide information and methodologies about a closed health care system that may be utilized by other similar treatment facilities to help improve ambulatory patient care.

Finally, this graduate research project will be limited to the development of a demographic profile representative of missed appointments, identification of most affected clinics, analysis and development of alternative proposals to improve or correct the situation. During the evolution of any research, innumerable questions and ramifications evolve, but this paper, of necessity, must be limited to the questions identified in the beginning. It is assumed that the finished research will be applicable at

any MEDDAC that operates clinics and a central appointment system. Additionally, current manpower and monetary constraints will limit the research to the identification of those alternatives that can be implemented within these boundaries while creating as little additional administrative burden upon the existing system as possible.

FOOTNOTES

[1]Headquarters, US Army Health Services Command, Ambulatory Patient Care Program, FY76, APC model #1, July 1975.

[2]J. Vissers, Selecting a Suitable Appointment System in Outpatient Setting, Medical Care, December, 1979. VOL 17 NO. 12 Pg 1207.

II. LITERATURE REVIEW

Patients dropping out from medical appointments create inefficiencies for medical providers, threaten the validity of clinical research and may themselves suffer unnecessary morbidity. A review of literature concerning patient dropouts and broken appointments was undertaken in an effort to identify correlates of the behavior, assess proposed interventions and identify issues for the content and methodology of the present research that is the primary subject of this paper.

PROBLEM DEFINITION

Most articles reviewed made distinctions between dropping out and missing appointments. Many of these definitions seem to be highly variable and appear to be arbitrary. Dropping out may be defined in terms of number of appointments kept, number of appointments broken, time in therapy or time missed from therapy[1,2,3]. Definitions have thus included patients who keep psychotherapy treatments on ten consecutive occasions[4] versus those who break eight consecutive appointments[5], those who miss a year of therapy[6], those who miss at least three monthly appointments in a year[7] and a host of other possibilities. At a future time, reviews have cited evidence that some "drop outs" resume care[8]. These examples suggest that "dropping out" is an extreme in the spectrum of broken appointment behavior. The term "dropping out" is perhaps best reserved for those programs with a defined time span or a defined end point (e.g. therapeutic trials) and may be less appropriate to the management of general outpatient clinics. However, because of the general widespread use of this term

during the review of literature, this term will be included with missed appointments for the purposes of reviewing appointment breaking behavior.

VARIABLES AFFECTING MISSED APPOINTMENTS

Explanation of broken appointment rates have concentrated primarily upon factors related to the patients, with emphasis placed upon demographic characteristics, such as socioeconomic status, race, religion, age, sex and educational levels. Other factors such as attitudes toward health care and personality factors were also noted. Occasionally, additional factors have also been investigated, including the effect of weather and distance[9], and variables associated with organization itself such as the appointment system, staffing patterns, and information flow in the organization[10]. Most studies have concluded with acceptance of a primary hypothesis which is that low-income patients do not keep appointments as well as people in middle-class socioeconomic groups[11]. A listing of some of the various factors that have been studied is at table 1. These have been classified into four major groups: The patient, the provider, the organization and the environment.

A host of studies have been conducted trying to correlate certain demographic characteristics. As a whole, these studies have been inconsistent and not entirely enlightening. It does appear, however, that younger age correlates with higher rates of broken appointments in a majority of the studies[12,13,14,15,16]. Another major factor cited in most studies as a correlate with broken appointments is low economic status[17,18,19,20,21], as does educational level[22,23,24]. The effect

TABLE 1. VARIABLE FACTORS OF MISSED APPOINTMENTS

The Patient

Demographic Factors
- Age
- Sex
- Race
- Religion
- Occupation
- Socioeconomic Status
- Marital Status
- Mode of Payment
- Place of Birth
- Language or culture

Sociobehavior
- Intelligence
- Previous dropout
- Previous Use of Facility
- Health Belief Model
  - Perception of disease as serious
  - Personal susceptibility to disease
  - Perception of treatment process
- Drug Dependence
- Head of Household
- Belief in the Health System

Interaction with Provider
- Expectations met
- Satisfaction with visit
- Education or explanation provided about the patient's problem
- Reminder of appointment

The Provider

Demographic Factors
- Age
- Sex
- Race
- Place of Training
- Attitudes of Behavior
- Patient Load

Type of Treatment
- Cost
- Side effects
- Medication prescribed and type
- Duration
- Degree of Behavioral change required

The Organization

Access Factors
- Distance
- Cost
- Transportation
- Telephone in home

Facilities
- Waiting time
- Referral Source
- Patient-Staff ratio
- Parking
- Time between scheduling and appointment
- Retrospective Reminders
- Prospective Reminders
- Scheduling errors

The Environment

- Day of week of appointment
- Time of day of appointment
- Weather
- Influence of family and friends
- Family size
- Features of disease
  - Diagnosis
  - Severity
  - Duration
  - Previous Treatment
  - Symptoms
  - Functional impairment

of race is unclear. When age, education and socioeconomic status are accounted for, race is probably unimportant[25,26,27,28]. In most studies other demographic features of the patient, such as sex, occupational status, marital status and religion, appear to have little bearing on attendance behavior, although there are a few studies suggesting a role for each of these factors[29,30,31,32,33]. In some, age, education and socioeconomic status are probably the only consistently important demographic influences on appointment keeping behavior. However, these may not be independent factors and are subject to local variations.

The mode of payment (self-pay, Medicare, Medicard, health insurance) has been found to be important in some studies. As would be expected, self-pay patients have a greater tendency to break appointments than those covered by a medical insurance plan[34]. However, two other studies identified no significant relationship with payment mechanism[35,36]. Obviously, this is not independent of several of the demographic variables noted, such as age and socioeconomic status. Again, if one compares data across published reports, prepaid plans appear to have somewhat higher kept-appointment rates than other forms of practice, but obviously many variables may be acting. It appears overall that the amount of out-of-pocket payment at the time care is sought has some importance, while the source of any third party contribution does not[37].

Beliefs of the individual's perception of his disease, including his perception of the seriousness of the illness, his perceived susceptibility to disease and his belief in the efficacy of treatment make up the

"Health-Belief-Model"[38]. It appears these beliefs are important correlates of compliance with medical recommendations in general, including appointment keeping behavior[39,40]. This concept poses one possible method of intervention. There is widespread belief that health education will effect greater compliance on the part of the client and the more knowledgeable the client is about his medical condition, the more likely he will be to comply with a prescribed regimen[41]. Some studies that have researched this area have shown educational efforts can improve broken appointment rates[42,43].

Another area of interest in studies but with little supporting data concerns provider behavior and characteristics and their relationship to breaking appointments. Factors such as age, racial differences, professional identity (school attended, years of experience, etc.) were ascertained to have weak to no correlation[44]. However, studies of sex and continuity of care factors have been shown to have statistical correlation[45]. The latter factor, continuity of care, is plagued by methodological problems, not the least of which are defining and measuring continuity[46]. However, in those studies that did concern themselves with this area it was demonstrated to be an important factor[47,48].

Other studies have looked at clinical aspects of the patient's disease or complaint as they relate to attendance. Factors such as duration of treatment, medications prescribed and side effects of treatment and cost have all been evaluated with only prescriptions showing a positive correlation. However, these studies were conducted at clinics specializing

in chronic illnesses such as psychiatric disorders and hypertensive diseases[49,50].

Another area that psychiatric literature deals with to some extent is the patient-therapist relationship. One study showed a significantly higher broken appointment rate in those clinics where no attempt was made to provide personal physician care[51]. Another showed a decrease in broken appointments as physician tenure increased, hypothesizing that older physicians tend to have longer standing cases fostering a close physician-patient relationship[52]. A third study showed a strong positive correlation of appointment keeping with a positive first impression by the patient of his therapist[53].

Many studies reviewed how facilities accommodated their functions to the needs of the population it served. These factors are often omitted in many studies, but may be at least as important as patient factors. One important characteristic is patient waiting time. This is a function of the scheduling system, of patient lateness for appointments and physician lateness. One study showed both physician and patient were found to be more punctual under the individual appointment system[54]. It may be that the failure of an appointment system can be explained not in terms of inherent differences based upon demographic characteristics, but in a breakdown of communication on the part of the organization delivering care. Another clinic factor affecting appointment rates is the source of appointments, notably from the emergency room[55]. Patients scheduled through this area had a significantly higher no-show rate. This may be due to the transient nature of patients seen in the emergency room versus patients

who have just recovered from a serious illness or hospitalization who are more apt to expect or need follow up care and can, therefore, be expected to keep their appointments[56]. Time between scheduling and the appointment has a variable influence, but in general, the longer the interval, the greater the number of broken appointments[57,58,59,60]. Other organizational factors such as home visits and neighborhood clinics have also been shown to have a positive effect on appointment keeping, but this type of intervention was not compared with the simple expedient of mailed or telephone reminders[61].

In the area of intervention, probably the most studied variables have been the use of telephone and/or postcard reminders to reduce broken appointments and generally has been the most successful. The notification of appointments by the health center may be one method of improving patient-provider communication and reflect concern on the part of the health center. However, these modes of intervention can be costly as computed by one study to be $.20 per appointment with the mailed strategy and $.40 per appointment with the telephone strategy[62]. As this study was performed in 1975, inflation and increases in postal rates have most certainly pushed these rates higher. Therefore, a cost-benefit analysis must be performed by any institution that may contemplate the use of these types of intervention. In contrast, retrospective reminders for contacting the appointment failures so as to determine the causes and act to reduce the future incidence has been shown to have no significant change in appointment failure rates[63,64].

Factors of access have been evaluated in several studies. These include distance from clinic, availability of transportation, presence of a telephone and cost. The only consistent conclusion in this area is that distance from the health care setting does not appear to be a factor in broken appointments[65,66]. What has been cautioned in this area is the fact that these variables may not be independent of socioeconomic status[67].

Finally, some environmental variables have been investigated. Weather (excluding extremely severe conditions, such as heavy snowfall) probably has very little influence on appointment keeping[68]. Family size seems to show a fairly consistent relationship with broken appointments (large families having more broken appointments) and the presence of small children may be especially relevant[69,70]. Family stability as recorded by a variety of measures also appears to influence appointment-keeping rates[71]. The expectation of friends may exert an influence and the time of day and day of the week have minor, if any, role in appointment failure rates[72].

PATIENT SURVEYS

One analysis method often used to ascertain sociobehavioral characteristics that may indicate a pattern of broken appointment behavior is the use of patient surveys. This technique is used in follow up interviews by telephone, questionaires or personal interview[73,74,75,76,77,78]. The most frequent reasons in most surveys were that patients forgot, did not known about the appointment, or misunderstood. Another major cluster of reasons centered around specific problems: Lack of transportation, a sick person at home or not eneough money. Time or work conflicts were

noted fairly often and a number of patients said they were either feeling better or feeling too sick to keep the appointment. Criticism of the provider or facility accounted for a consistently small number of responses. The validity of such data clearly is open to question since respondents may wish to avoid offending interviews and may rationalize behavior in retrospect[79].

INTERVENTIONS FOR DECREASING BROKEN APPOINTMENTS

As this review has indicated, the act of missing an appointment or dropping out can be as a result of the complex interaction of a multitude of variables. For the health care organization, the problem lies in identifying those factors which they can influence to help promote appointment keeping. Clearly certain details which have been discussed are unalterable, such as demographic factors, features of the patient's illness and many environmental factors. Most successful interventions, then, have been aimed at clinic organization and the patient-provider interaction.

With regards to clinic organization, research has shown that helpful structural changes may include the use of mailed prospective reminders within the week before the appointment and the use of an individual appointment system as opposed to block scheduling. Shortening the interval from scheduling to appointment may help, but excessively frequent appointments should be avoided.

Turning to the patient-provider interaction, a potentially helpful action may include educational efforts aimed at conveying knowledge of disease, its therapy and the importance of continuing care. Patients who

have previously dropped out of treatment or consistently missed appointments should also be promptly identified and their reasons for doing so elicited. Because reasons for broken appointments vary widely, successful interventions may also vary widely and may need to be tailored to the individual patient.

The use of various incentives to appointment-keeping has been described[80], but these methods have apparently not been evaluated in published studies. These include a discount in billing for special care without broken appointments; fees for missed appointments and refusal to reschedule missed appointments after one or a specified number have occurred[81].

In one report, a method was presented for adjusting the scheduling of appointments to reduce the "deleterious effects of broken appointments[82]." This method was a quantitative approach for estimating each patient's likelihood of attending and devised a rule for overscheduling clinic sessions by an appropriate number. However, there is empirical evidence that this strategy will not be effective[83] and this approach does not address the issue of continuity of patient care but also overscheduling leads inevitably to occasional overloads, with longer waits for patients and increased demand on provider staff.

During this literature review, only one article could be identified to have studied this problem in a military setting[84]. This study was performed in 1965 at the U.S. Public Health Service Hospital in New Orleans. The study essentially identified by clinic and beneficiary, the number of missed appointments and then via surveys, the reasons why

patients missed appointments. No action was discussed on how to reduce the no-show rates which ranged from 4% to 32%.

Finally, this literature review provided this writer with the necessary background to develop the methodologies for this study. The following chapters will discuss the present system and its operation and a macroanalysis of the appointment system by clinic to determine problem areas. These results will dictate a more in-depth study in specific problem clinics to identify trends in broken appointments and the development of recommended courses of action. On a limited basis, one or more of these recommended courses of action will be implemented and analyzed to determine their effect. Finally, the concluding chapter will summarize the research and suggest areas for future research.

FOOTNOTES

[1]J. R. Caldwell, S. Cobb, M. D. Dowling, et al, "The dropout problem in antihypertensive treatment," Journal of Chronic Disease 22 (1970): 579.

[2]J. V. Dervin, D. L. Stone, C. H. Beck, "The no-show patient in the model family practice unit," Journal of Family Practice 7 (June 1978): 1179.

[3]L. F. Nazarian, J. Mechabler, E. Charney, et al, "Effect of a mailed appointment reminder on appointment keeping," Pediatrics 53 (March 1974): 349.

[4]F. Baekeland, L. Lundwall, "Dropping out of treatment: A Critical review," Psychology Bulletin 82 (1975): 738.

[5]K. L. Davis, F. M. Estess, S. C. Simonton, et al, "Effects of payment mode on clinic attendance and rehospitalization," American Journal of Psychology 134 (1977): 576.

[6]A. R. Hertroijs, "A study of some factors affecting the the attendance of patients in a leprosy control scheme," International Journal of Leprosy 42 (1974): 419.

[7]Caldwell, p. 579.

[8]Bakeland, p. 740.

[9]S. Jonas, "Influence of weather on appointment breaking in a general medical clinic," Medical Care 11 (January 1977): 73.

[10]J. Vissers, "Selecting a suitable appointment system in an outpatient setting," Medical Care 17 (December 1979): 1207-1220.

[11]P. Hertz, P. L. Stamps, "Appointment keeping behavior re-evaluated," American Journal of Public Health 67 (November 1977): 1033.

[12]Jonas, p. 73.

[13]W. Shonick, B. W. Klein, "An approach to reducing the adverse effects of broken appointments in primary care systems: Development of a decision rule based on estimated conditional probability," Medical Care 15 (May 1977): 423.

[14]Hertz, p. 1035.

[15]A. V. Hurtado, M. R. Greenlick, T. I. Colombo, "Determinents of medical care utilization: Failure to keep appointments," Medical Care 11 (March 1973): 193.

[16]H. T. Go, A. Becker, "Reducing broken appointments in a primary care clinic," Journal of Ambulatory Care Management 2 (May 1979): 25.

[17]J. J. Alpert, "Broken appointments," Pediatrics 34 (July 1964): 129.

[18]R. F. Badgley, M. A. Furnal, " Appointment breaking in a pediatric clinic," Yale Journal of Biological Medicine 34 (October 1961): 118.

[19]Hurtado, p. 197.

[20]C. P. Shah, J. R. MacBride, G. A. Lamb, "Appointment System: Why does a patient not return?" Canadian Journal of Public Health 68 (March/April 1977): 151.

[21]A. R. Fiester, K. E. Rudestam, "A multivariate analysis of the early dropout process," Journal of Consulting and Clinical Psychologists (April 1975): 528.

[22]O. C. Stine, C. Chuagui, C. Jimenez, et al, "Broken appointments at a comprehensive clinic for children," Medical Care 6 (May 1968): 322.

[23]Hurtado, p. 197.

[24]R. H. Tash, R. M. O'Shea, L. K. Cohen, "Testing a preventative-symptomatic theory of dental health behavior," American Journal of Public Health 59 (June 1969): 514.

[25]Jonas, p. 86.

[26]Shonich, p. 421.

[27]Alpert, p. 129.

[28]Hurtado, p. 197.

[29]S. J. Gates, K. Colborn, "Lowering appointment failures in a neighborhood health center," Medical Care 16 (March 1976): 266.

[30]Hertz, p. 1035.

[31]Dervin, P. 1177.

[32]A. R. Fiester, A. R. Mahrer, L. M. Geambra, et al, "Shaping a clinic population: The dropout problem reconsidered," Community Mental Health Journal 10 (February 1974): 177-178.

[33]R. E. Cummings, "A study of chacteristics of patients who fail to complete a VA alcoholic treatment program," Rehabilitation Literature 36 (May 1975): 139-140.

[34]Go, p. 26.

[35]Hertz, p. 1035.

[36]Dervin, p. 178-179.

[37]R. A. Deyo, T. S. Inui, "Dropouts and Broken Appointments: A Literature Review and Agenda for Future Research," Medical Care 18 (November 1980): 1149.

[38]I. M. Rosenstock, "Why people use health services," Milbank Memorial Fund Quarterly 44 (July 1966): 94.

[39]Task, p. 516.

[40]Hertz, p. 1033-1034.

[41]E. Glogon, "Effects of health education methods on appointment breaking," Public Health Report 85 (May 1970): 448.

[42]Ibid, p. 448-449.

[43]K. L. Shmarak, "Reduce your broken appointment rate: How one children and youth project reduced its broken appointment rate," Public Health 61 (December 1971): 2401.

[44]Hurtado, p. 194.

[45]D. M. Steinwachs, "Measuring provider continuity in ambulatory care: An assessment of alternative approaches," Medical Care 17 (June): 551.

[46]Deyo, p. 1150.

[47]Alpert, p. 131.

[48]J. R. Caldwell, p. 590.

[49]J. L. Delk, W. E. Johnson, "Treatment continuers and discontinuers in an adult outpatient psychiatric clinic," Journal of Arkansas Medical Society 72 (February 1975): 92.

[50]J. F. Bigges, "A comparison of patient compliance in treated versus untreated ocular hypertension," Ophthalmology 81 (February 1976): 277.

[51]Alpert, p. 129.

[52]Hurtado, p. 196.

[53]Fiester, p. 352.

[54]Hertz, p. 1034.

[55]Shah, p. 148.

[56]P. B. Hoffman, J. F. Rockart, "Implications of the no-show rate for scheduling OPD appointments," Hospital Progress 50 (August 1969): 32.

[57]G. A. Hagerman, "Testing the mailed appointment reminder in family practice," Journal of Family Practice 7 (January 1978): 200.

[58]Hurtado, p. 197.

[59]Shah, p. 150.

[60]Nazarian, p. 350.

[61]Deyo, p. 1151.

[62]D. S. Shepard, T. A. E. Moseley, "Mailed versus telephoned appointment reminders to reduce broken appointments in a hospital out-patient department," Medical Care 14 (March 1976): 272.

[63]Hurtado, p. 197.

[64]Go, p. 25.

[65]Hurtado, p. 197.

[66]Fiester, p. 175.

[67]Deyo, p. 1152.

[68]Jonas, p. 74.

[69]Alpert, p. 128-129.

[70]Hurtado, p. 192.

[71]Alpert, p. 130.

[72]Deyo, p. 1152.

[73]Walsh, p. 70-72.

[74]Alpert, p. 129.

[75]Go, p. 28-29.

[76]Shah, p. 150.

[77]Caldwell, p. 582-86.

[78]Hofmann, p. 37.

[79]Deyo, p. 1152.

[80]G. L. Oppenheim, J. J. Bergman, E. C. English, "Failed appointments: A review," Journal of Family Practice 8 (April 1979): 789.

[81]Deyo, p. 1153.

[82]Shonick, p. 419.

[83]Dervin, p. 1180.

[84]J. J. Walsh, J. L. Benton, I. G. Arnold, "Why patients break appointments," Hospital Topics 45 (February 1967): 67.

III. THE OUTPATIENT DEPARTMENT AND APPOINTMENT SYSTEM

Reynolds Army Community Hospital (RACH) is a multispecialty facility providing comprehensive inpatient and outpatient medical and surgical care to military personnel and other eligible beneficiaries living on or in the near vicinity of Fort Sill, Oklahoma. Although designed to operate and run 250 beds, the current beds in operation are 204 with an average daily census of 132[1]. RACH operates 30 medical (Figure 1) and surgical clinics plus 5 troop medical clinics that have in excess of 45,000 outpatient visits per month. For purposes of this study, the fifteen clinics that follow will be the system of concern:

Family Practice	Internal Medicine
Pediatrics	General Surgery
Physical Therapy	Podiatry
Gynecological	Dietetics
Optometry	General Urology
Orthopedics	Dermatology
Audiology	Ophthalmology
Obstetrics	

These clinics are located within the main building of the hospital and are predominantly reliant upon an appointment system. The remaining clinics either have no appointments (troop medical clinics, emergency room, acute minor illness clinic, one station training), take only referrals (inhalation therapy, orthopedic appliances, orthopedic casts) or are located in separate outlying buildings and make their own appointments (occupational health, physical exam, community health nurse,

FIGURE 1*

MEDICAL DEPARTMENT ACTIVITY

ORGANIZATIONAL STRUCTURE OF THE PROFESSIONAL SERVICES

REYNOLDS ARMY COMMUNITY HOSPITAL

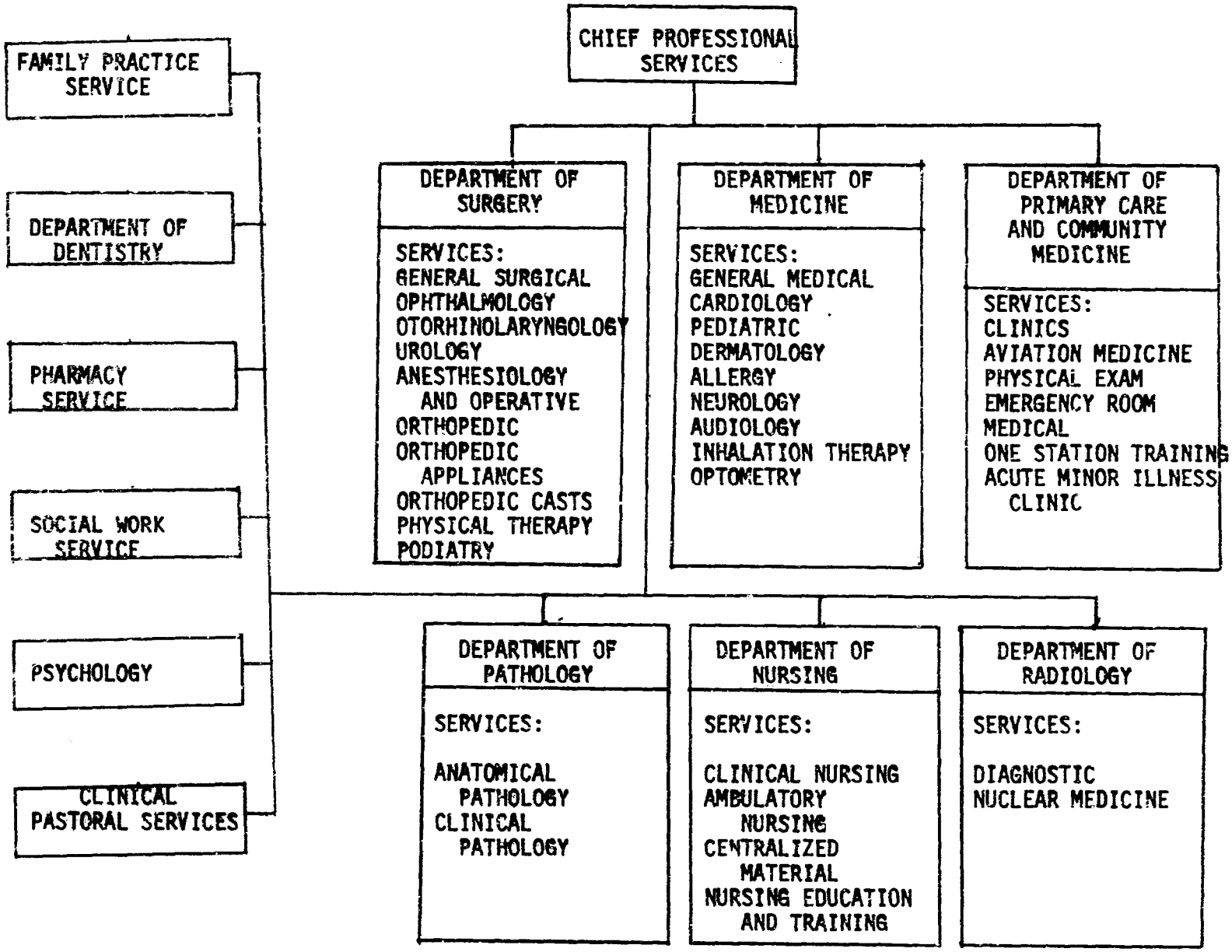


*Figure from MEDDAC Regulation 10-1, dtd 1 March 1980

psychology and Community Mental Health Agency). Except for OB/GYN, Orthopedics and Physical Therapy, all clinics rely upon the Central Appointment Service (CAS) to make individualized appointments for each clinic. The CAS has five appointment clerks and one supervisor, operating from 0730 to 1630 hours Monday through Friday. The system is manual in that all appointments are handwritten and posted to a master appointment sheet for each physician. Patients can only access the system telephonically using "direct lines" phones located throughout the outpatient clinic areas of the hospital or by using any public or private phone.

These components make up the system of concern for this paper. In the next chapter, an initial analysis of the "macrosystem" and its findings are discussed.

FOOTNOTE

[1]Command Performance Summary: A Review and Analysis of 1st Quarter FY82 Command Operations. HQ U.S. Army Health Services Command, p. 35.

IV. MACROSYSTEMS ANALYSIS

The initial analysis began with a study of 142,193 outpatient visits made during a thirty-two week period (1 June 81 to 15 Janury 82)[1]. All were categorized as shown in the tables contained in this chapter.

Table 2 shows the distribution of patient load by clinic. Of particular note is that the Family Practice clinic has almost three times the workload of the next largest clinic. Although the OB/GYN clinics are physically one and the same, the initial analysis treated them as separate entities to determine if workload and missed appointments in one or the other clinics was significantly different than the other. As this was not the case, for purposes of discussion the data for these clinics will be consolidated. The combined workload of the top four clinics (Family Practice, Pediatrics, Physical Therapy and OB/BYN) accounts for 65% of the workload in scheduled clinics.

Table 2/Patient load by clinic*

Clinic	# of Patients	% of Total Patients
Family Practice	44154	31.05
Pediatrics	15835	11.14
Physical Therapy	15207	10.69
Gynecology	10594	7.45
Optometry	10150	7.15
Orthopedics	7860	5.53
Obstetrics	6622	4.66
Audiology	6121	4.30
Internal Medicine	5665	3.98
General Surgery	4601	3.24
Podiatry	4264	3.00
Dietetics	3658	2.57
General Urology	2715	1.92
Dermatology	2649	1.86
Ophthalmology	2098	1.46
TOTALS	142,193	100.00

*32 weeks (1 June 81 to 15 January 82)

While RACH uses an appointment system, the extent and proportional usage by clinic was unknown. Accordingly, tables 3 and 4 were constructed. Table 3 shows that the patient load is almost evenly distributed between walk-ins, appointments made by the clinic and appointments made by the Central Appointment System. In total, just over 72% of all visits are made by appointments. The large number of walk-ins was not unexpected, as most clinics provide walk-in sick call for active duty personnel during the first hour of operation.

Findings in table 4 are more interesting. The Ambulatory Patient Care model for Central Appointment Systems assumes that 70% of all out-patient visits can be appointed. The remainder are walk-ins, or do not use CAS for other reasons. However, this table shows that only three of the fifteen clinics meet this standard. Also, two of the most heavily used clinics, Physical Therapy and OB/GYN, essentially do not use the CAS.

Table 5 compares the "did not keep appointment" (DNKA) and cancellation rates of appointments by clinic and patients. Nearly one in every 10 patients cancels or fails to keep his appointments for one reason or another. It is interesting to note that this rate is almost identical to the Public Health Service study of 1965[2]. Since the number of patients involved in the remaining clinics is small in comparison to the top four, their operational characteristics will not be discussed in this paper. Certain findings are impressive, however, in the case of the remaining four clinics. The Physical Therapy clinic has a no-show rate of 17.39% and the

TABLE 3/Application of appointment system to total patient load

Number of walk-ins	51858	(33.78%)
Number of Appointed Patients		
Made by CAS	56683	(36.93%)
Made by Clinic	44955	(29.29%)
Totals	153498	(100.00%)

Table 4/Proportion of Appointments by CAS versus Clinic

Clinic	Total Patients	% Appointed	% Appointed by CAS	% Appointed by Clinic
Family Practice	44,154	70.50	91.52	8.48
Pediatrics	15,835	68.21	97.93	2.07
Physical Therapy	15,207	94.06	2.61	97.39
OB/GYN	17,216	64.80	0	100.00
Optometry	10,150	44.81	96.54	3.46
Orthopedics	7,860	61.65	0	100.00
Audiology	6,121	17.35	43.54	56.46
Internal Medicine	5,665	47.44	68.92	31.08
General Surgery	4,601	53.81	40.88	59.12
Podiatry	4,264	69.45	96.76	3.24
Dietetics	3,658	93.12	24.82	75.18
General Urology	2,715	57.16	29.21	60.79
Dermatology	2,649	49.93	90.55	9.45
Ophthalmology	2,098	58.01	32.78	67.22

Table 5/Relationship between individual clinics, patient load, DNKA's and cancellations

Clinic	Total % Patient Load	% Total DNKA	% Cancellation by clinic	% Cancellation by patient
Family Practice	31.05	7.43	.40	2.96
Pediatrics	11.14	4.98	.03	2.21
Physical Therapy	10.69	17.39	.12	.45
Gynecology	7.45	11.29	.22	4.15
Optometry	7.15	6.82	.08	1.00
Orthopedics	5.53	2.32	.08	.39
Obstetrics	4.66	14.63	.05	5.08
Audiology	4.30	12.90	0	2.66
Internal Medicine	3.98	5.19	1.94	3.47
General Surgery	3.24	2.25	.91	.63
Podiatry	3.00	6.63	.57	2.01
Dietetics	2.57	5.78	.22	1.81
General Urology	1.92	1.37	4.03	1.18
Dermatology	1.86	9.78	1.48	2.61
Ophthalmology	1.46	7.73	3.12	2.43
Total	100.00	100.00		

Table 6/Comparision of DNKA and Cancellation rates of appointment patients by clinic

Clinic	DNKA %	Cancellations %
Physical Therapy	29.89	3.23
Family Practice	28.18	42.96
Obstetrics	9.82	13.18
Gynecology	8.16	11.59
Pediatrics	6.45	10.81
Optometry	7.71	2.02
Dietetics	2.89	2.89
Podiatry	2.77	2.75
Internal Medicine	1.62	4.01
Audiology	1.60	1.25
Dermatology	1.55	1.59
Orthopedics	1.33	.82
Ophthalmology	1.12	1.38
General Surgery	.65	.70
General Urology	.26	.82
Total	100.00	100.00

OB/GYN clinic a combined no-show rate of 25.92%. The only other clinic with a double digit no-show rate is Audiology at 12.9%. However, this clinic only represents 4.3% of the total workload and, as mentioned earlier, will not be discussed here.

Various cancellation rates range from 0 to near 5 percent. The APC model standard is 5 to 10 percent, which indicates a need for making patients aware of their responsibility to cancel appointments they are unable to keep.

Table 6 shows, for comparison, the percentage of total patients that "did not keep appointments" and cancellation rates by clinic. Of the four major clinics, Physical Therapy patients had the least consideration in cance ing appointments while those in Family Practice had the most. Of the total no-shows, 29.89% were from Physical Therapy, 28.18% from Family Practice and almost 18% from OB/GYN. Again, this data indicates a need to educate the population regarding cancellations.

Finally, table 7 displays beneficiary status by percentage of patient load, beneficiary population and did not keep appointment (DNKA). Of particular note is that dependents of active duty personnel make up just over one-fourth of the beneficiary population, yet account for nearly one-half of the patient load and nearly two-thirds of all missed appointments. This information indicates a need for directing educational efforts at this portion of the beneficiary population.

The sum total of this analysis directs the remaining research into the Physical Therapy and OB/GYN clinics. This decision is based upon three facts. First, these two clinic's workload represent a large portion of the overall workload. Thus, any positive results will give

Table 7/Beneficiary status by percentage of patient load, beneficiary population and DNKA

	% Patient Load[3]	% Beneficiary Population[4]	% DNKA[5]
Active Duty	32.33	36.73	24.43
Dependent/Active duty	48.96	26.76	63.38
(Wife)			(35.64)
(Daughter)			(15.06)
(Son)			(12.68)
Retiree	7.77	30.20 (includes dependents)	3.49
Dependent/Retiree	10.18		8.7
Other	.56	6.31	--
Totals	100.00	100.00	100.00

the greatest return on continuity of care and increased workload for the hospital. Secondly, these two clinics missed appointment rates are the highest of all the clinics. Finally, these two clinics both rely almost entirely upon their own resources to make appointments, raising the question of effectiveness between clinics making their own appointments versus a Central Appointment System.

FOOTNOTES

[1]Outpatient Work Sheet compiled from Central Appointment Lag Reports on Missed Appointments, 1 June 81 to 15 January 1982.

[2]S. Jonas, "Influence of weather on appointment breaking in a general medical clinic," Medical Care 11 (January 1977): 73.

[3]Ibid, Footnote 1.

[4]Director of Resources and Community Activities, Headquarters, U.S. Army Field Artillery Center, Fort Sill, OK 73503, 28 Feb 82.

[5]Compilation of 1664 missed appointments from September 1981 through December 1981, using FS MEDDAC Form 287, Clinic Appointments.

V. MICROSYSTEMS ANALYSIS

This portion of the study consisted of in-depth analysis of clinic organization, staffing, patient referral and appointment procedures and study of demographic characteristics of patients.

OB/GYN CLINIC

The OB/GYN clinic provides medical care for both military and dependent females. An average of 669 obstetrical visits, 120 deliveries and 1,444 gynecological visits are made each month. The present staffing consists of five obstetricians, two nurse practitioners and thirteen additional medical and clerical support personnel[1].

The clinic sees all patients initially seeking confirmation of pregnancy or presenting with gynecological complaints. The obstetrical patients, once pregnancy is confirmed, are initially scheduled in blocks of fifty to attend a medical history and informative appointment where the obstetrical records are initiated with medical history, laboratory tests and assorted vital statistics. Also, during this session, expectant mothers are given information on the various stages of the pregnancy, actions they should take and are given their prenatal vitamins. These records are then reviewed by a Family Practice physician who assigns most uncomplicated pregnancies to various Family Practice physicians (Appendix A). The obstetricians follow the potentially complicated cases, all active duty pregnancies, expectant mothers who have recently arrived at Fort Sill and all other patients not otherwise assigned to Family Practice. This normally equates into about one half of all pregnancies being seen or followed by the OB/GYN clinic (an average of 60 per month). The

next step is the scheduling of the initial physical, after which time the physician will instruct the patient to make return appointments at various intervals (one to four weeks usually) as the case dictates. One interesting observation in regards to these return appointments is that, unlike the patients assigned to Family Practice, OB patients seen in this clinic are not followed by one physician, but are seen by the physician or parctitioner that is available at the time of their appointment. The reason for this policy is that the obstetrician that is on call for deliveries will be the one in attendance at time of delivery; therefore, the patient will be familiar with that doctor via contact at sometime during the routine return appointments during the gestational period[2].

The clinic schedule is arranged so that the Medical History session is scheduled for Tuesday morning and OB physicals and return visits are appointed Monday afternoons and Wednesday mornings. The remaining times are booked with GYN patients. Patients can make appointments telephonically or in person while visiting the clinic.

An analysis of the type of beneficiary utilizing OB/GYN services is depicted in figure 2. The predominant patient beneficiary using these services is the dependent of an activity duty member. A question arised regarding the possibility that maybe the magnitude of the no-show rate in one of the three stages of the OB system, the medical history session, physical appointments or OB return appointments, might be overly biasing the overall OB no-show rate of 14.63%. In order to accept or reject this hypothesis, an analysis was conducted of the first three months of 1982. The results are contained in table 8. Data utilized was the same

FIGURE 2

PATIENT LOAD IN OB/GYN CLINIC BY BENEFICIARY MAKEUP

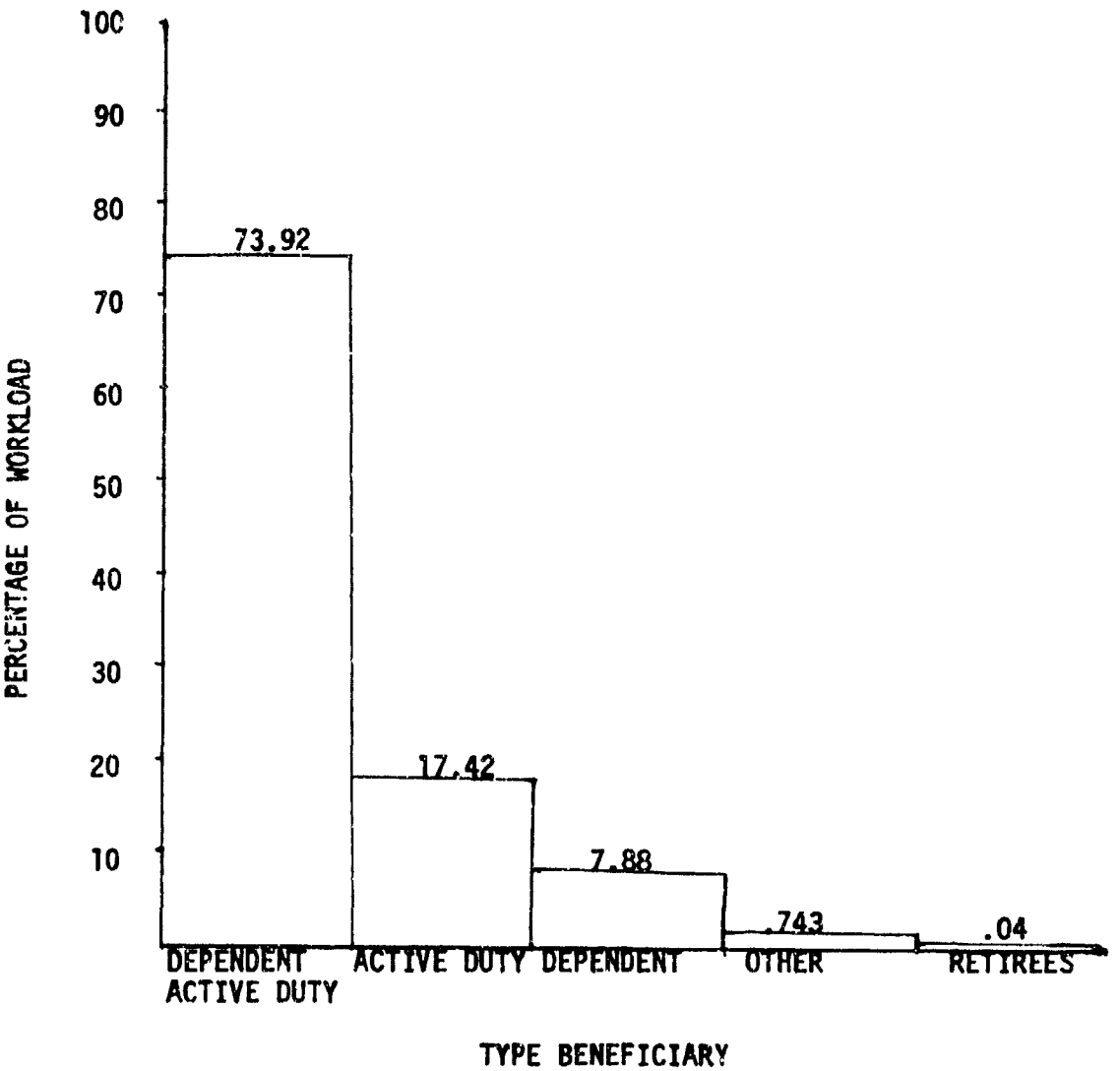


TABLE 8

OB MISSED APPOINTMENTS BY CATEGORY OF TREATMENT

	Total #	% of Total Appointments	Total # DNKA	Total % DNKA	% of Total DNKA	Total #	Total % Canc	% of Total Cancellations
OB Phy	118	5	13	11	2.9	10	8.5	8.5
Hist	751	32	171	22.8	39	36	4.8	30.5
Returns	1470	63	266	14	58.1	72	4.9	61
Totals	2339	100.00	450		100.00	118		100.00
Average %				19.2			5.04	

routinely submitted to CAS to compute no-show rates. This analysis did show that return appointments, representing 63% of the total OB workload, accounted for 58% of all OB patients who break an appointment. Also, the medical history sessions, representing 32% of the OB workload, accounted for 38% of all OB missed appointments.

Keeping in mind that GYN patients also have a high missed appointment rate, 11.29%, a questionaire was developed (Appendix B) to gain further demographic data and to solicit reasons as to why patients missed appointments. One hundred questionaires were distributed; fifty to a block of medical history patients and fifty over a period of two weeks to OB returns and GYN patients. Eighty-seven questionaires were returned, data collated and is displayed in table 9. As one might expect, the patients are predominantly young, 77% being 28 or under, and are or sponsored by an active duty member in rank of E-6 or below. Of more interest is the fact that 73% have fewer than two cars. Assuming the husband uses the car to go to work and with no public transportation in the Lawton, OK, area, one could hypothesize that these patients would have difficulty keeping their appointments. But, only 5% said they had problems in this area. Also, with a combined OB/GYN no-show rate in excess of 25%, this fact would also seem to imply a significant affirmative response to either difficulty in keeping appointments or having missed an appointment in the hospital. However, responses to the three questions concerning this area did not indicate a significant problem in this regard.

One final phenomenon was observed with regards to responses to the questionaire. This survey was designed in hopes of also obtaining written

Table 9/Data from OB/GYN Questionaire
(all data reflect percentage of totals by category)

Age	19-23	24-28	29-33	34-38	39-43	44
	48	29	7.5	4	2.5	9
Grade	E1-E4	E5-E6	E7-E9	WO	O1-O3	O4-O6
	40	25	8	4	20	3
Sex	Male		Female			
	0		100			
# of cars	0	1	2	3		
	12	61	20	7		
Get to hospital	Walk	Bus	Taxi	Personal Car	Friend's Car	
	1.5	1.5	5	80	12	
	Yes	No	Sometimes			
Referred	53	47				
Understand TX	84	16				
Believe will improve w/o TX	50	47	3			
Given exercises	66	34				
Difficult to keep appointment	5	87	8			
Home phone	93	7				
Have you missed an appt at this hospital	20	80				
Live on post	21	79				

comments to the various questions that might later be grouped under similar categories to identify trends or problem areas. With the potential of six or more comments per questionaire, out of 87 surveys returned, only 22 written comments were submitted. This was in comparison to 53 comments from 67 identical surveys processed in the Physical Therapy clinic. The OB/GYN comments and frequency of occurrence were as follows:

Communications breakdown	2
Work interference	3
Family problems	4
Personal problems	6
Clinic crowded	4
Transportation problem	2
Delivered before appointment	1

These responses may substantiate the hypothesis that respondents may wish to avoid offending interviewers and may rationalize behavior in retrospect, a fact that was discussed in other research[3].

PHYSICAL THERAPY CLINIC

The physical therapy clinic provides medical care for all eligible beneficiaries, an average of 1900 visits per month. Control over workload is very limited as it is primarily a referral service and frequently the number of treatments to be given is specified by the physician. The present staffing calls for six physical therapists, seven physical therapy specialists, two assistants and one medical receptionist/typist[4].

Once patients are referred, an initial evaluation is made by a physical therapist and a treatment card initiated. During this session, the physical therapist emphasizes the importance of keeping their appointments to insure the regular progression of strengthening and restoration of their particular problem. A printed information leaflet with this and

additional information on clinic procedures and policies is given to the patient (Appendix C). The patient is then given a one-time block of appointments for the specified number of treatments. This procedure is unique in the hospital in that all other patients are given return appointments, as necessary, after the completion of a visit. This creates an additional class of patients missing appointments -- the "dropout." After these individual miss three consecutive appointments, the remainder of their appointments are cancelled and the patient is considered to be a "dropout" from prescribed therapy. It has been the experience of the PT staff that the majority of these patients never return to complete their treatment[5]. In relation to other clinics, this would seem to artificially inflate the PT clinics missed appointment rate by a factor of 2 for every dropout. That is, patients in all other clinics would have to miss an appointment and then would have to reschedule and miss two more appointments to equal one PT dropout. When two missed appointments are backed out for every dropout during the 32-week period running 1 June 81 to 15 Jan 82 (table 10) the missed appointment rate drops from 17.39% to 12.8%.

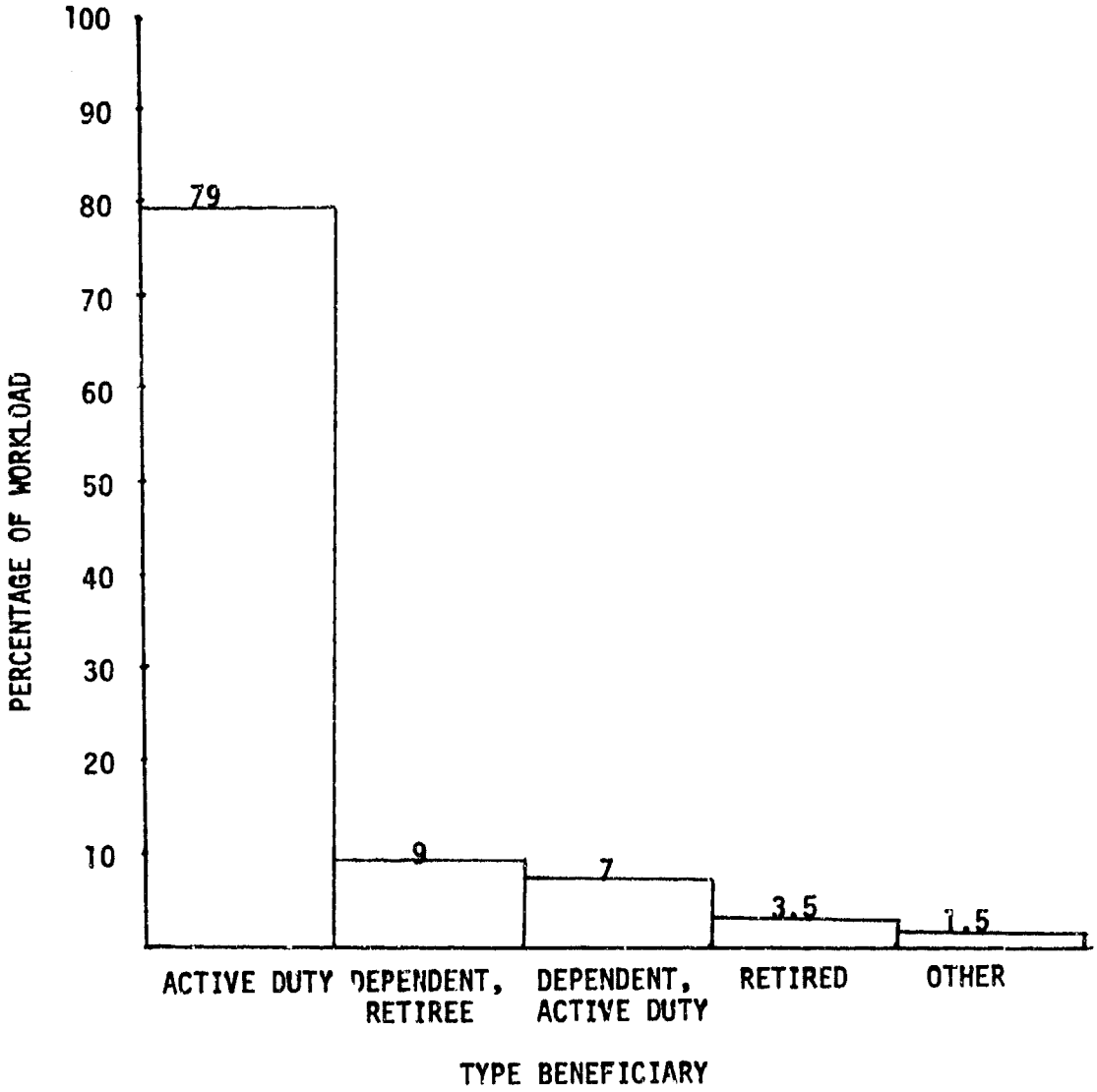
An analysis of the type of beneficiary utilizing the PT clinic is depicted in figure 3. The predominant patient beneficiary using these services is active duty personnel, representing 79% of the workload. This group was designated as the target group for soliciting data via a questionaire (Appendix B). In this case, the target group was defined as active duty members who had completed a minimum of three or more treatments. In discussions with the Chief of PT, it was felt that this criteria was necessary in order to minimize biasing the input that might occur from the

Table 10/Missed Appointment Rates (DNKA) Before and After Two Appointments per Dropout are Backed Out

Total Workload	Dropouts	Total DNKA	% DNKA	
			Before	After
15,207	352	2,644	17.39	12.8

FIGURE 3

PATIENT LOAD IN THE PHYSICAL THERAPY CLINIC BY BENEFICIARY MAKEUP



potential "dropouts" that can only be identified after three missed appointments. The results of 67 surveys returned (out of 100) are displayed in table 11. This data again reflects a young population, 67% being 28 years of age or younger, male (85%), and predominantly enlisted (90%), of which 59% are in the grades of E1 to E4. Unlike the responses to the OB/GYN clinic questionaire, 51% responded to having some difficulty keeping their appointment and 58% said they had missed an appointment in the past. These respondents were also provided considerable commentary regarding problems with appointment keeping, categorized as follows:

Family Problems (child sick, no baby sitter)	6
Unit/Work Conflict	21
Weather (too cold, raining)	4
Transportation Problem	8
Communication Problem (misunderstood, forgot)	3
Personal (payday, sick, business)	5

The predominant reason given for missing appointments was related to unit or work conflicts. These responses could primarily be grouped into three areas: Someone in the unit would not allow them to attend (Company commander, first sergeant, platoon sergeant, etc), they were in the field, or they had duty the night before. In all three categories, the individual lays the blame on another person or activity, never assuming any responsibility for his or her actions.

This in-depth microanalysis of these two clinics has set the foundation for adopting assumptions, exploring alternatives for intervention in hopes for improving appointment keeping and initiating, on a limited basis, a trial intervention to establish the effectiveness of that action. This will be the subject of the next chapter.

Table 11/Data from PT Questionaire
(all figures represent percentage of totals by category)

Age	19-23	24-28	29-33	34-38	39-43	44
	45	22	17	15	1	
Grade	E1-E4	E5-E6	E7-E9	WO	01-03	04-06
	59	24	7	3	5	2
Sex	Male		Female			
	85		15			
# of cars	0	1	2	3		
	22	56	16	6		
Get to hospital	Walk	Bus	Taxi	Personal Car	Friend's Car	
	18	11	10	52	9	
	Yes	No	Sometimes			
Referred	95	5				
Understand TX	75	25				
Believe will improve w/o TX	39	61				
Given exercises	97	3				
Difficult to keep appointment	6	49	45			
Home phone	81	19				
Have you missed an appt at this hospital	58	42				
Live on post	42	58				

FOOTNOTES

[1]DA Form 140-1 Manpower Survey Report, July 1981, MEDDAC, Reynolds Army Community Hospital, Department of Surgery, OB/GYN Service, sheet number 2, line number 16.

[2]Interview with Donna Noriega, DAC Supervisor, OB/GYN Service, 25 February 1982.

[3]R. A. Deyo, T. S. Inui, "Dropouts and Broken Appointments: A Literature Review and Agenda for Future Research," Medical Care 18 (November, 1980): 1149.

[4]DA Form 140-1, Manpower Survey Report, 1 July 1981, MEDDAC, Reynolds Army Community Hospital, Department of Surgery, Orthopedic Service, Physical Therapy, sheet number 3, line number 3.

[5]Interview with LTC James Roberts, Chief, Physical Therapy Clinic, 16 February 1982.

VI. INTERVENTION AND IMPACT

ASSUMPTIONS

This study was undertaken as a result of concerns voiced by the staff about the magnitude of missed appointments. Therefore, the interventions designed and tested will be those that will most effectively utilize this concern. In the development of the intervention plan, the following assumptions are adopted:

1. That the concern on the part of the staffs of the affected clinic can be utilized to effectively reduce broken appointments.
2. That efforts to encourage timely patient attendance can best be effected during those periods when the patient is in direct contact with the clinic staff (either in person or telephonically).
3. That patient behavior can be modified to take responsibility for either attending their scheduled appointment or making timely cancellations.
4. That any actions adopted will not violate the limitations set forth earlier in this paper, primarily being not adding undue administrative burden nor excessive costs.

The effectiveness of actions taken will be measured against three criteria:

1. Actions taken will be considered effective when they show a statistically significant reduction in missed appointments, using a 5% level of confidence.
2. Because of the effort necessary to effect intervention, any difference between the before and after interventions that is less than 5% and not

statistically significant at the 5% level of confidence will not be considered meaningful.

3. The optimal level of average "no-shows" for each clinic will be set at less than 10%.

INTERVENTION PLAN

With these assumptions and limitations, discussions were undertaken with the staffs of each clinic to design, adopt and implement a course of action. All of the intervention actions discussed in the literature review were considered, but two new approaches were adopted:

OB/GYN CLINIC

Staff activities within this clinic are almost maximized by the actions dictated to handle the present workload. Therefore, two actions were implemented for a thirty-day period while remaining within the constraints of the limitations and assumptions. First, all staff members, when in direct contact with the patient either during a visit or telephonically, emphasized the recent high missed appointment rate and encouraged the patients attendance or timely cancellation. Specifically, it was mentioned that one in four appointments were being missed, preventing many other needy patients from receiving expeditious care. Additionally, an article was published twice during this month (6 and 20 April) in the post newspaper, alerting the general beneficiary population to the appointment problem within this clinic (Appendix D).

PHYSICAL THERAPY

In contrast to the OB/GYN actions, which were passive as far as patient involvement is concerned, the PT clinic adopted an active mode of

action. Since the therapists made an initial evaluation of each patient, discussing their problem and treatment, it was decided to try to obtain a personal commitment from the patient to make their appointments or to call and reschedule. This action took the form of an informal contract (Appendix E), which the patient would sign and then be included in his record. This action was also planned for a thirty-day trial period.

IMPACT OF INTERVENTION

The results of the intervention were measured after thirty days and the results displayed in table 12. The OB/GYN and Physical Therapy clinics show a decline of 11.23 and 2.63 percentage points respectively. Both were tested against the null hypothesis of $P_{before} - P_{after} \leq .05$ (see Appendix F). That is, the proportion of no-shows before the intervention process less the proportion of no-shows after the intervention process is hypothesized to be less than or equal to 5%. The null hypothesis (H_0) is tested against the alternative hypothesis (H_a) of: $P_b - P_a > .05$. That is, the proportion of missed appointments before intervention less the proportion after intervention is hypothesized to be greater than 5 percent. Both proved to be statistically significant at the 5% and 1% level of confidence, meaning we reject the null hypothesis and can state that these methods of intervention are statistically significant (Appendix F). In the case of the Physical Therapy clinic, statistical analysis shows that even though this reduction was less than 5%, it still is significant. Thus, the intervention process met the first two criteria. As for the third requirement, reducing the no-show rate to less than 10%, this criteria was not achieved. However, recalling the concern of "an inflated"

Table 12/Did Not Keep Appointment (DNKA) rates after intervention

	Total Patients	Total Appointments	Total DNKA	% DNKA
OB/BYN clinic	2,321	1,559	229	14.69
Physical Therapy clinic	2,379	2,639	389	14.76

no-show rate in the PT clinic discussed in Chapter V, if two visits per dropout (68) are backed out of their no-show figure of 389 for the month of April, the PT's overall "no-show" rate drops to 9.59%. Additionally, one of the OB/GYN survey comments, "missed appointment because I delivered," led to discussions with the Chief, OB/GYN, that disclosed that approximately 60 appointments per month are missed because of this fact. If these figures are backed out from their "no-shows" for the month of April, the OB/GYN clinic's average "no-show" rate drops to 10.84%. It is realized that these "if" contentions may be difficult to translate into concrete mechanisms to effect the desired results. However, these facts lend themselves to further study in hopes of designing acceptable systems to eliminate these administrative difficiencies which ar artificially inflating the missed appointment rates of these two clinics. Such actions combined with the described interventions will allow both clinics the potential of meeting all three established criteria.

Finally, analysis would seem to indicate that all assumptions were met except in one case. The act of trying to encourage patients to assume some responsibility for their own care via an informal contract created undue additional administrative time demands on the PT staff. It was found that an additional 5 to 10 minutes per patient was required primarily due to the patient's reluctance to enter into such a contract without additional explanations and encouragement on the part of the therapist. The magnitude of the workload within this clinic creates an undue cumulative effect on staff time constraints and raises a question as to the relative value of this intervention. It certainly would be applicable to any

clinic that has not maximized the available contact time with the patient. However, in this specific case, a further study may be warranted to ascertain the magnitude of change that can be influenced via another alternative, an external force, i.e., command level agreement for all units to reply by endorsement for missed PT appointments. This area may lend itself to future research efforts.

VII. CONCLUSION AND RECOMMENDATIONS

This research has demonstrated one approach to an in-depth analysis of the problem of broken appointments in a military treatment facility. The writer is confident that if the methodology followed in this research is applied at other military treatment facilities with similar problems, the true problem areas will be pinpointed for in-depth analysis that will lead to alternative courses of intervention and hopefully positive returns.

During the course of this research, innumerable questions arose that could have lent themselves to voluminous research or management analysis studies. The following recommendations are offered as potential areas of research or for study for development of corrective actions:

1. That methodologies be developed to match deliveries with projected appointments in the OB/GYN clinic in order to schedule other patients into these time periods.
2. That analysis of booking appointment policies and procedures in the Physical Therapy clinic be conducted to establish if more efficient and effective appointment procedures other than "block appointments" can be developed.
3. That future research in this area be conducted to determine which external intervention forces might be implemented to achieve positive gains. gains.
4. That research be conducted on organizational characteristics and practitioner behavioral traits that can be used to influence patient behavior toward compliance with prescribed therapy.

Finally, the complexities of the innumerable organizational and behavioral forces that impact within this problem area may deter health care organizations from entering into studies of this magnitude. However, besides the positive impact that can be realized from increased continuity of care achieved by regular attendance at medical appointments and prescribed treatments, there is an additional economic incentive for Army medical treatment facilities. Presently, Health Services Command will provide operating funds at a rate of $4,600 per medical care composite unit (MCCU). For those clinics providing primary care, such as OB/GYN, Family Practice, etc, .3 times the average daily outpatient visits will generate one MCCU. For this facility, the reduction of missed appointments in the OB/GYN clinic should potentially generate 2 additional MCCU's. If the reduction rate in this one clinic can be sustained, the potential yearly budget increase would be approximately $100,000. Resource management dictates that all health care facilities utilize every means to maximize the return on managed assets.

APPENDIX A

LETTER REGARDING ASSIGNMENT OF OBSTETRIC PATIENTS

DEPARTMENT OF THE ARMY
REYNOLDS ARMY HOSPITAL
FORT SILL, OKLAHOMA 73503

ATZR-MRH-PS

Dear

☐ You have been assigned to _____

- ☐ Family Practice A
- ☐ Family Practice B
- ☐ Family Practice C & D
- ☐ The OB-GYN Clinic

☐ Please contact Central Appts. (351-2111) for an OB physical Appt.

☐ A physical appt. has been made for you on _____.
In the OB Clinic

Please call 351-6791, or 351-2711 is you have any questions or if you cannot keep this appointment.

Sincerely,

OB-GYN Clinic
Reynolds Army Hospital

FSMEDDAC Form Letter 32
1 Apr 80

L 4117 Army-Fort Sill, Okla.

APPENDIX B

PATIENT QUESTIONAIRE

PATIENT QUESTIONNAIRE

GOOD DAY!

Hello, this is _____, and I'm a Red Cross volunteer calling for the Out-Patient Department at Reynolds Community Hospital. Because our doctors are interested in giving the best possible medical care, they have asked that we call a sample of our patients to get their feedback about our clinic services and to discuss patient understanding of their treatments, medications, and special instructions. Your name was selected at random from patients seen this year in our department. This telephone interview takes about 10 to 15 minutes. Your identity will be kept confidential. Would you be interested in helping us with this?

1. AGE _____ 2. SEX _____ 3. SPONSOR'S RANK _____

4. Were you referred to this clinic for further treatment? _____ Yes _____ NO
   If YES, why do you think you were referred for treatment? _____

5. Do you think you have a good understanding of your problem area? _____ YES _____NO
   COMMENTS _____

6. Do you think you will improve without further treatment? _____ YES _____ NO
   COMMENTS _____

7. Were explanations for doing certain activities or exercises given to you?

   _____ YES _____ NO

8. Is it difficult to keep your appointments? _____ YES _____ NO _____ SOMETIMES
   If "YES" or "SOMETIMES" please comment. _____

9. How many cars are in your family? 0 1 2 3 (CIRCLE ONE)

10. Do you LIVE ON or OFF POST? (CIRCLE ONE)

11. How do you get to the hospital? WALK BUS TAXI PERSONAL CAR FRIEND'S CAR (CIRCLE ONE)

12. Have you ever missed an appointment at this hospital? _____YES _____ NO
    If "YES" please state why. _____

13. If you have missed an appointment in the last ten days to two weeks, it would be <u>most important</u> if you would provide the reason why. _____

APPENDIX C

PHYSICAL THERAPY INFORMATION

HANDOUT

PHYSICAL THERAPY CLINIC
US REYNOLDS ARMY COMMUNITY HOSPITAL
FORT SILL, OKLAHOMA

Appointments for treatment in Physical Therapy have been scheduled for you at the recommendation of your physician. (See attached appointment slip)

Physical Therapy is a form of treatment designed to relieve pain and/or restore strength and function. It is essential that the treatments be given regularly, as scheduled, in order to maximize progress as each days treatment builds on the previous one. Treatment times normally cannot be changed on a daily basis. Patients can only be excused prior to a treatment by the Chief, Physical Therapy Clinic or the Assistant Chief, Physical Therapy Clinic, in the Chiefs' absence. The decision to excuse a patient will be strictly a medical decision.

Your name will automatically be removed from the schedule and your appointment given to someone else after three consecutive missed appointments. A note to this effect will be entered in your health record. If you are discontinued for missing treatment and desire reevaluation for resumption of treatment, active duty must report to the Physical Therapy Clinic with health record for sick call 0730-0930 hours, Monday through Friday; others will make an appointment for reevaluation through Central Appointments, 351-2111.

Patients arriving for treatment at times other than their appointed time may be worked in if the schedule permits as determined by the senior therapist, commensurate with quality care for all patients.

Any questions concerning your treatment or scheduling should be directed to the Chief, Physical Therapy Clinic or your therapist at 351-2616 or 351-2918.

APPENDIX D

TEXT OF NEWSPAPER RELEASE ON MISSED APPOINTMENTS IN THE OB/GYN CLINIC

TEXT OF NEWSPAPER RELEASE ON

MISSED APPOINTMENTS IN

THE OB/GYN CLINIC

MISSED APPOINTMENTS. Reynolds Army Community Hospital authorities report a high missed appointment rate in the Obstetrics/Gynecological Clinic. One patient in four is missing an appointment in this clinic. The clinic staff is concerned that these missed appointments will jeopardize continuity of care to their patients. During pregnancy it is very important to monitor the development and overall progress of the mother and unborn child. Other medical problems seen in the GYN Clinic also require careful monitoring to prevent more serious medical problems. If you are a patient of the OB/GYN Clinic, the clinic staff urges you to keep your appointment or call 351-2711 or 351-6791 to reschedule appointments you are unable to keep. Doing this far enough in advance will insure your health and open appointments for other patients who are waiting to be seen in their clinic.

APPENDIX E

PATIENT CONTRACT

My treatment plan has been discussed with me by my physical therapist and the importance of completing the scheduled program of exercises and/or treatment. I give my word that I will comply with my treatment schedule or will call in advance to reschedule another appointment.

____
(Signature)

My treatment plan has been discussed with me by my physical therapist and the importance of completing the scheduled program of exercises and/or treatment. I give my word that I will comply with my treatment schedule or will call in advance to reschedule another appointment.

(Signature)

My treatment plan has been discussed with me by my physical therapist and the importance of completing the scheduled program of exercises and/or treatment. I give my word that I will comply with my treatment schedule or will call in advance to reschedule another appointment.

(Signature)

My treatment plan has been discussed with me by my physical therapist and the importance of completing the scheduled program of exercises and/or treatment. I give my word that I will comply with my treatment schedule or will call in advance to reschedule another appointment.

(Signature)

My treatment plan has been discussed with me by my physical therapist and the importance of completing the scheduled program of exercises and/or treatment. I give my word that I will comply with my treatment schedule or will call in advance to reschedule another appointment.

(Signature)

APPENDIX F

STATISTICAL ANALYSIS

DEFINITIONS

$H_o : P_b - P_a \leq .05$

$H_a : P_b - P_a > .05$

Where P_b is the proportion of missed appointments before intervention and P_a is the proportion of missed appointments after intervention.

P_b = proportion before intervention

P_a = proportion after intervention

M_b = the before intervention population

M_a = the after intervention population

$$P = \frac{P_b + P_a}{M_b + M_a}$$

$$Z = \frac{(P_b - P_a) - (.05)}{\frac{P\ (1 - P)}{M_b} + \frac{P\ (1 - P)}{M_a}}$$

PT CLINIC

$$P = \frac{2487 + 389}{14304 + 2635}$$

$$P = .1698$$

$$Z = \frac{(.1739 - .1476) - (.05)}{\frac{.1698\ (1 - .1698)}{14304} + \frac{.1698\ (1 - .1698)}{2635}}$$

$$Z = -2.98$$

$F_{\ ,\ ,.999} = -1$

reject H_o

OB CLINIC

$$P = \frac{2892 + 229}{11{,}156 + 1559}$$

$$Z = \frac{(.2592 - .1469) - (.05)}{\frac{.2455\ (1 - .2455)}{11{,}156} + \frac{.2455\ (1 - .2455)}{1559}}$$

$Z = 5.35$

$F_{,\ ,\ .999} = 1$

reject H_0

SELECTED BIBLIOGRAPHY

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Journals

Alpert, J. J. "Broken Appointments." Pediatrics 34 (July 1964): 127-132.

Ambuel, J. Philip, M.D., et al. "Urgency as a Factor in Clinic Attendance." American Journal of Diseases of Children 108 (October 1964): 394-398.

Badgley, Robin F., and Turnal, Marilyn A. "Appointment Breaking in a Pediatric Clinic." Yale Journal of Biology and Medicine 34 (October 1961): 117-123.

Caldwell, John R., et al. "The Dropout Problem in Antihypertensive Treatment." Journal of Chronic Diseases 22 (June 1970): 579-592.

Cohen, Alan J., Ph.D.; Weinstein, Philip, Ph.D; and Wurster, Carol, Ph.D. "The Effects of Patient Initiated Phone Confirmation Strategies on Appointment Keeping at a Hospital Dental Clinic." Journal of Public Health Dentistry 40 (Winter 1980): 64-68.

Cummings, Robert E., D.Ed. "A Study of Characteristics of Patients Who Fail to Complete a VA Alcoholic Treatment Program." Rehabilitation Literature 36 (February 1975): 139-141.

Dervin, John V.; Stone, David L.; and Beck, Charles H. "The No-Show Patient in the Model Family Practice Unit." The Journal of Family Practice 7 (June 1978): 1177-1180.

Deyo, Richard A., M.D., and Inui, Thomas S., Sc.M., M.D. "Dropouts and Broken Appointments." Medical Care 18 (November 1980): 1146-1157.

Duffey, Ruth "How to Reduce the 'No-Show' Rate." Dimensions in Health Service 55 (February 1978): 28-29.

Tiester, Alan R., Ph.D., et al. "Shaping a Clinic Population: The Dropout Problem Reconsidered." Community Mental Health Journal 10 (February 1974): 173-179.

Tiester, Alan R., and Rudestam, Kjell E. "A Multivariate Analysis of the Early Dropout Process." Journal of Consulting and Clinical Psychology 43 (April 1975): 528-535.

Gates, Susan J., and Colborn, D. Kathleen "Lowering Appointment Failures in a Neighborhood Health Center." Medical Care 14 (March 1976): 263-267.

Shah, Chandrakant P.; MacBride, James R.; and Lamb, George A. "Appointment Systems: Why Does a Patient Not Return?" Canadian Journal of Public Health 68 (March/April 1977): 148-153.

Shephard, Donald S., and Moseley, Thomas A. "Mailed versus Telephoned Appointment Reminders to Reduce Broken Appointments in a Hospital Outpatient Department." Medical Care 14 (March 1976): 268-273.

Shmarak, Kenneth L. "Reduce Your Broken Appointment Rate: How One Children Youth Project Reduced its Broken Appointment Rate." American Journal of Public Health 61 (December 1971): 2400-2404.

Shonick, William, and Klein, Bonnie "An Approach to Reducing the Adverse Effects of Broken Appointments in a Primary Care System." Medical Care 15 (May 1977): 419-429.

Stafford, Edward F., Jr., and Aggarwal, Summer C. "Managerial Analysis and Decision Making in Outpatient Health Clinics." Journal of Operation Research Society 30 (October 1979): 905-915.

Vissers, J. "Selecting a Suitable Appointment System in an Outpatient Setting." Medical Care 17 (December 1979): 1207-1220.

Walsh, John Z.; Benton, Jess L.; and Arnold, Iola G. "Outpatient Care: Why Patients Break Appointments." Hospital Topics 45 (February 1967): 67-72.

Government Publications

Alexander, David F., MS, MA, DAC Central Appointment System Revisited Report HCSD-77-004. Fort Sam Houston, TX: Health Care Studies Division, Academy of Health Sciences, 1977.

Janke, Thomas A., COL, MSC How to Manage (Practically) Anything Systematically. GR 14-260-100 010. Fort Sam Houston, TX: Academy of Health Sciences, 1980.

Stuart, Richard B., et al. A Comparative Study of Patient Scheduling Systems For Army Sick Call Report AD-780-036. Fort Sam Houston, TX: Academy of Health Sciences, 1973.

United States Army Health Services Command. A Central Appointment System. Ambulatory Patient Care Model #1, HSC-PA-A. Fort Sam Houston, TX. By Author, July 1974.

United States Army - Baylor University Program in Health Care Administration. Administrative Residency Manual 1981-1982. Academy of Health Sciences, Fort Sam Houston, TX. By Author, July 1981.

Glowgow, Eli "Effects of Health Education Methods on Appointment Breaking." Public Health Reports 85 (May 1970): 441-450.

Go, Howard T., and Becker, Arthur "Reducing Broken Appointments in a Primary Care Clinic." The Journal of Ambulatory Care Management 2 (May 1979): 23-30.

Hagerman, Gordon A. "Testing the Mailed Appointment Reminder in Family Practice." The Journal of Family Practice 7 (Januray 1978): 199-201.

Hertz, Philip, and Stamps, Paula L. "Appointment Keeping Behavior Re-evaluated." American Journal of Public Health 67 (November 1977): 1033-1036.

Hoffmann, Paul B., and Rockart, John F. "Implications of the No-Show Rate for Scheduling Outpatient Department Appointments." Hospital Progress 50 (August 1969): 35-40.

Hurtado, Arnold V; Greenlisk, Merwyn R.; and Colombo, Theodore J. "Determinants of Medical Care Utilization: Failure to Keep Appointments." Medical Care 11 (March 1973): 190-198.

Jonas, Steven "Appointment Breaking in a General Medical Clinic" Medical Care 9 (February 1971): 82-88.

Jonas, Steven "Influence of the Weather on Appointment Breaking in a General Medical Clinic." Medical Care 11 (January-February 1973): 72-76.

Levy, Rona, and Claravall, Viqui "Differential Effects of a Phone Reminder on Appointment Keeping for Patients with Long and Short Between Visit Intervals." Medical Care 15 (May 1977): 435-438.

Maxted, George, and Gehlbach, Stephan "Effectiveness of Mailed Appointment Reminders." The Journal of Family Practice 12 (February 1981): 359-361.

Nazarian, Lawerence F., and Coulter, Molly P. "Effect of a Mailed Appointment Reminder on Appointment Keeping." Pediatrics 53 (March 1974): 349-352.

Oppenheim, Gene L.; Bergman, James J.; and English, Eugenia C. "Failed Appointments: A Review." The Journal of Family Practice 8 (April 1979): 789-796.

Schroeder, Steven A. "Lowering Broken Appointment Rates at a Medical Clinic." Medical Care 11 (January 1973): 75-78.

United States Army Health Services Command, Medical Department Activity, Fort Sill, OK. Organization and Functions Policy. MR 10-1, 1 March 1980.

Government Forms

DA Form 140-1 Manpower Survey Report, July 1981, MEDDAC, RACH, Department of Surgery, OB/GYN Services, sheet number 2, line number 16.

DA Form 140-1 Manpower Survey Report, July 1981, MEDDAC, RACH, Department of Surgery, Orthopedic Service, Physical Therapy, sheet number 3, line number 3.

FS MEDDAC Form 287 (Rev 1 Dec 78) Clinical Assignment Form.

DA Form 2789-R, (Dated 1 July 1976) Medical Summary Report. Reports were reviewed for the months of June, 1981, through April, 1982.

Interviews

Bryen, Martha J., DAC, Supervisor, Central Appointment Service. Interview: 9 December 1981 and 23 March 1982.

Connolly, James C., II, LTC, MC, Chief, OB/GYN Service. Interview: 25 March 1982.

Jordan, Anne, DAC, Secretary, OB/GYN Service. Interview: 11 March 1982.

Noriega, Donna, DAC, Supervisor, OB/GYN Service. Interview: 25 February 1982 and 6 April 1982.

Roberts, James E., Jr., LTC, AMSC, Chief, Department of Physical Therapy. Interview: 17 November 1981, 16 Febryary 1982, 22 March 1982, and 27 April 1982.

Zelly, Diane P., MAJ, AMSC, Assistant Chief, Department of Physical Therapy. Interview: 27 April 1982.